SEZAKI LAB.

Urban Sensing and Ubiquitous Computing

Department of Informatics and Electronics

Information and Communication Engineering

Department of Information and Communication Engineering, GSIST
Socio-Cultural Environmental Studies, GSFS
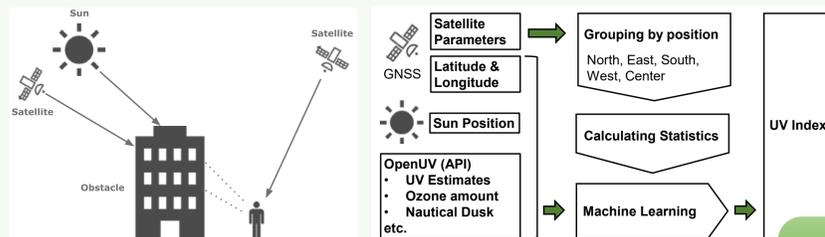
https://www.mcl.iis.u-tokyo.ac.jp/

Research topics:
1. to consider the support of the creative social activities, which utilize networks, and the creation of new applications
2. to operate the network element, system technology and system development of various applications

Behavioral Change & Well-being

UV index estimation leveraging correlation between GNSS satellite signal and obstacle distribution around the user
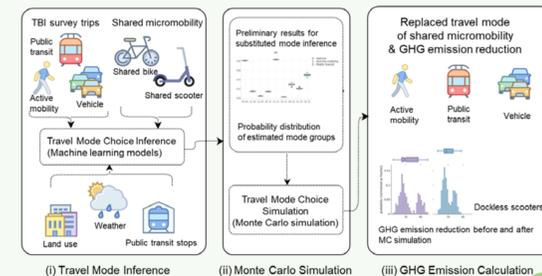

Societal Transformation

Mobile & Wearable Sensing

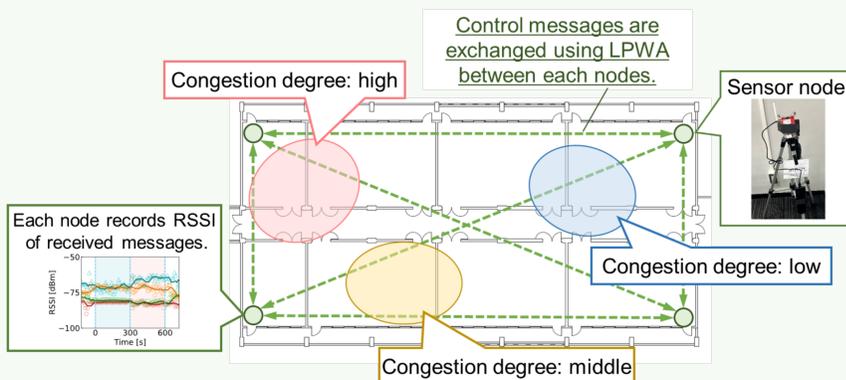**Detecting Childcare Activities Using Wearable Devices**

Examinee	Measuring Device	Target Behavior
6 to 24 months old Infants and toddlers	chest-mounted device · acceleration in x,y,z direction (G) · skin temperature (°C) · heart rate (bpm)	15 kinds of infant behavior Ex) crawl, drink a bottle of milk

Spatial Analytics

Estimation of Greenhouse Gas Emission Reduction by Shared Micromobility System

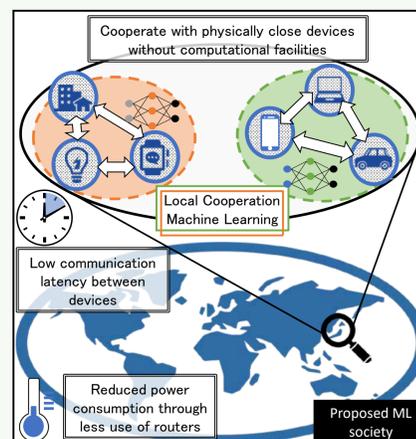(i) Travel Mode Inference   (ii) Monte Carlo Simulation   (iii) GHG Emission Calculation

Analysis & Estimation

Wireless Sensor Networks & Decentralized Learning

Wireless Sensing for Congestion Estimation Using Wireless Sensor Networks

Control messages are exchanged using LPWA between each nodes.

Congestion degree: high
Congestion degree: low
Congestion degree: middle
Sensor node
Each node records RSSI of received messages.

Concept of Zero-km Data for Decentralized Learning

Cooperate with physically close devices without computational facilities
Local Cooperation Machine Learning
Low communication latency between devices
Reduced power consumption through less use of routers
Proposed ML society

Fundamental Technology

Institute of Industrial Science, The University of Tokyo